

Amendments to the Drawings

The attached sheet of drawings includes an amendment to Fig. 5. This sheet replaces original Fig. 5. Reference 504 has been deleted and previously omitted reference number 518 has been added.

REMARKS

The specification has been amended to correct a typographical error. Fig. 5 of the drawings has been amended to delete reference number 504 and insert previously omitted reference number 518. Support for this amendment may be found in paragraph [0047] of the specification.

Claims 1, 3-27 and 29-39 are pending in this application. Claims 2 had been canceled and claim 1 has been amended to include the limitations of former claim 2. Claims 4, 8 and 12 have been amended to depend from claim 37 rather than from claim 1. Claim 20 has been amended to delete reference to "the field" and claims 23 and 33 have been amended to correct typographical errors. Claim 28 has been amended to specify that the neck of at least one gap is narrower than the rest of the gap. Support for this amendment is found in paragraph [0003], specifically on page 2, line 3.

No new matter has been added.

Drawings

The Examiner has objected to Fig. 5 of the drawings as not including reference number 518 mentioned in the description. Applicants have amended Fig. 5 to include this reference number. The Examiner has also objected to Fig. 5 as including reference number 504 not mentioned in the description. Applicants have amended Fig. 5 to delete this reference number.

Specification

The Examiner has objected to the specification for containing informalities, specifically in paragraph and [0042] and the Abstract. Applicants have amended the specification to correct these informalities.

Claim Objections

The Examiner has objected to claims 33 as containing informalities and claims 34-36 for depending from claim 33. Applicants have amended claim 33 to correct the cited informalities. Applicants believe these amendments obviate the objection to claims 33-36.

Rejections Under 35 USC §112

The Examiner has rejected claims 20 and 28 under 35 USC §112, second paragraph as being indefinite. The Examiner has rejected claim 20 for containing the limitation “the field,” and claim 28 for containing the term “reentrant features.” Applicants have amended claim 20 to delete reference to the term “the field.” Applicants have amended claim 28 to recite that the neck of at least one gap is narrower than the rest of the gap. Applicants believe that these amendments obviate the Examiner’s rejections.

Accordingly, Applicants request the Examiner withdraw these 35 USC §112, second paragraph rejections.

Rejections Under 35 USC §102

Claims 1-3, 5, 7, 9-11 and 27-29 have been rejected as being anticipated by US Patent No. 6,218,268 to Xia et al. (“Xia”). Claims 1-3, 5, 6, 9-11 and 27-29 have been rejected as being anticipated by US Patent Publication No. 2002/0006729 to Geiger et al. (“Geiger”). Claims 1, 4, 5, 8, 12, 23, 26 and 28-30 have been rejected as being anticipated by US Patent No. 6,790,737 to Schneegans et al. (“Schneegans”).

With regard to claim 1, Applicants have amended claim 1 to incorporate the limitations of former claim 2, thereby obviating the rejection over Schneegans. Applicants also submit that claim 1 is not anticipated by either Xia or Geiger for the reasons discussed below.

Claim 1 relates to a method of depositing a solid dielectric material in narrow gaps. Step (a) of the method involves exposing the substrate to a vapor-phase precursor of the dielectric material to achieve selective condensation of the precursor in the gaps. The vapor phase precursor thus condenses (i.e., a vapor-to-liquid transition) in the gaps before being converted to a solid material. This aspect of the invention is important as it takes advantage of the propensity for liquids to condense preferentially and to remain condensed in small features. Thus, unlike conventional CVD reactions (in which vapor is deposited as a solid on the substrate), the liquid and resulting solid material is localized in small feature gaps. The methods result in the reduction of voids in the gaps as well as the reduction of excess material formed outside of the gap. See, e.g., paragraphs [0005] and [0017].

Xia describes a conventional CVD reaction in which a vapor precursor is deposited to form a solid film. The solid material may be melted to fill voids that may be present from the CVD process (col. 10, lines 44-57; Figs. 3A-3C). Thus, Xia describes a vapor-to-solid transition (the chemical vapor deposition) and a solid-to-liquid transition (melting), but does not teach or suggest condensation of the vapor precursor as required by Applicants' claim 1.

Geiger teaches the same method of deposition as taught in Xia with the additional step of using UV light is used to melt the solid film (paragraph [0037]). Thus, Geiger also does not teach or suggest condensation of the vapor precursor.

For at least these reasons, Applicants request the rejection of claim 1, as well as claims 3, 5-7, 9-11 and 27-29, which depend from claim 1 be removed. As discussed above, claims 4, 8, 12 have been amended to depend from allowable claim 37. Accordingly, Applicants request that the rejection of these claims be removed as well.

Allowable Subject Matter

The indication of allowability of claims 13-19, 21, 22, 24, 25, 31 and 32 if rewritten in independent form is gratefully acknowledged. As discussed above, Applicants believe that the remaining claims are in condition for allowance and have not amended these claims pending consideration of the above arguments.

The indication of allowability of claim 33-36 if rewritten or amended to overcome the objections set forth in the Office Action is also gratefully acknowledged. As discussed above, Applicants have amended these claims and believe they are now in condition for allowance.

Conclusion

In view of the foregoing, Applicants believe that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below. No fees are believed due in connection with the filing of this paper. If any fees are due over and above the fees provided with the amendment, such fees may be charged to deposit account No. 500388 (Order No. NOVLP084).

Respectfully submitted,
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